

changes have not been made for purposes related to patentability.

Claims 1 and 2 are the only independent claims.

The specification has been amended as to a matter of form, including that kindly pointed out in the Office Action.

In the Office Action, Claims 1-4 were rejected under 35 U.S.C. 112, second paragraph, as indefinite. In particular, the Office Action states that "a phrase [in Claim 1] 'conductors disposed on a substrate in opposed relationship with each other' is not clear in term of what relationship conductors do refer[; a]re conductors deposited in an opposite direction?"

Applicants respectfully submit that the phrase "conductors disposed on a substrate in opposed relationship with each other", appearing in the originally filed version of Claim 1, means that the conductors are physically arranged on a substrate, in a manner so that they oppose one another, as one skilled in the art would clearly appreciated in view of the originally-filed specification. Nonetheless, while Applicants strongly believe that originally filed Claims 1 and 2 both conform fully to the requirements of Section 112,

second paragraph, and without conceding the propriety of the Section 112 rejection set forth in the Office Action, Claims 1 and 2 have been amended to delete the phrase found to be objectionable by the Examiner.¹ Accordingly, the withdrawal of the Section 112 rejection set forth in the Office Action is respectfully requested.

Claims 1-4 were rejected under 35 U.S.C. 103(a) as obvious over U.S. Patent 6,147,449 (Iwasaki et al.) in view of U.S. Patent 5,716,618 (Tomoda).

Claim 1 is directed to an electron-emitting device having a pair of electric conductors disposed on a substrate and a pair of films composed chiefly of carbon and connected to the pair of electric conductors and disposed with a gap interposed therebetween. The films contain one or more kinds of elements selected from the group of lithium, potassium, sodium, calcium, strontium and barium within the range of 1 mol% to 5 mol% in terms of the percentage to carbon.

Claim 2 is directed to an electron-emitting device provided with a pair of device electrodes disposed on a substrate, an electrically conductive film connected to the

^{1/} As indicated above, the changes made to Claims 1 and 2 have not been made for purposes related to patentability.

pair of device electrodes and having a fissure between the pair of device electrodes, and a carbon film composed chiefly of carbon and formed in the fissure and on an area including the fissure and having in the fissure a gap of a width narrower than the fissure. The carbon film contains one or more kinds of elements selected from the group of lithium, potassium, sodium, calcium, strontium and barium within the range of 1 mol% to 5 mol% in terms of the percentage to carbon.

Iwasaki et al. teaches an electron-emitting device comprising a base plate 1, device electrodes 2 and 3, an electroconductive thin film 4, an electron-emitting region 5, and a coating film 6. At col. 5, lines 36-41 Iwasaki et al. indicates that the electroconductive thin film 4 may include metals such as Pd, Pt, Ru, Ag, Au, Ti, In, Cu, Cr, Fe, Zn, Sn, and Pb, oxides such as PdO, SnO₂, In₂O₃, PbO, and Sb₂O₃, borides such as LaB₆, CeB₆, YB₆, and GdB₆, carbides such as TiC and SiC, nitrides such as TiN, and semiconductors such as Si and Ge. The coating 6 includes a simple metal or an alloy of elements, as described at col. 8, beginning at line 8.

Applicants respectfully submit that, while Iwasaki et al. may be well-suited for its intended purpose, and as

the Office Action recognizes, nothing in Iwasaki et al. would teach or suggest films composed chiefly of carbon, connected to a pair of electric conductors and disposed within a gap interposed therebetween, wherein the films contain one or more kinds of elements selected from the group of lithium, potassium, sodium, calcium, strontium and barium within the range of 1 mol% to 5 mol% in terms of the percentage to carbon, as recited in Claim 1. Neither would anything in Iwasaki et al. teach or suggest a carbon film composed chiefly of carbon, formed in a fissure of an electrically conductive film between electrodes, wherein the carbon film contains one or more kinds of elements selected from the group of lithium, potassium, sodium, calcium, strontium and barium within the range of 1 mol% to 5 mol% in terms of the percentage to carbon, as recited in Claim 2.

Tomida et al. relates to a solution used for fabricating electron-emitting devices, a method of manufacturing electron-emitting devices, and a manufacturing method of an image-forming apparatus. Page 4, lines 1-3 of the Office Action alleges that col. 4, lines 15-67 and col. 5, lines 1-45 of Tomida et al. teach "an electron-emitting device . . . having a solution, for forming electron-emitting

region forming thin films composed of conductive surface, composed chiefly of carbon and potassium." Applicants respectfully disagree with this allegation for the following reasons.

In Applicants' view, the cited portions of Tomida et al. refer merely to a solution of metallic salts of carboxylic acid, for use in forming an electron-emitting region forming thin film (see, e.g., col. 4, lines 15-27 and col. 5, lines 1-45). The solution is changed, via baking, into an inorganic metal such as a metallic salt, a metallic nitride, or an inorganic metal compound, as described col. 4, lines 32-40, col. 5, lines 24-30, and col. 20, line 14. Although the solution of the metallic salt of carboxylic acid includes carbon, Tomida et al. does not teach that carbon remains in the electron-emitting region forming thin film produced through the baking process. Indeed, in Applicants' view, nothing in Tomida et al. would teach or suggest films composed chiefly of carbon, connected to a pair of electric conductors and disposed within a gap interposed therebetween, wherein the films contain one or more kinds of elements selected from the group of lithium, potassium, sodium, calcium, strontium and barium, as recited in Claim 1, or a

carbon film disposed in a manner as recited in Claim 2 and containing one or more of the foregoing elements. Neither does Tomida et al. teach or suggest that such film elements, selected from the group of lithium, potassium, sodium, calcium, strontium and barium, are within a range of 1 mol% to 5 mol% in terms of the percentage to carbon, as recited in Claims 1 and 2.

Since neither Iwasaki et al. nor Tomida et al. teaches or suggests the above-emphasized features of Claims 1 and 2, even if those reference were to be combined in the manner proposed in the Office Action (which, in any event, is not admitted would have been obvious), the resulting combination still would teach or suggest those features. Accordingly, Claims 1 and 2 are each deemed clearly patentable over Iwasaki et al. and Tomida et al., whether considered separately or in combination.

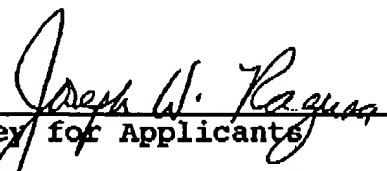
A review of the other art of record has failed to reveal anything which, in Applicants' opinion, would remedy the deficiencies of the art discussed above, as references against the independent claims herein. Those claims are therefore believed patentable over the art of record.

The other claims in this application are each dependent from either base Claim 1 or 2 discussed above, and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,


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